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**SYSTEM FOR DEPOSITING AND SUBMITTING COMMINGLED PAPER AND
ELECTRONIC FINANCIAL INSTRUMENTS INTO THE PAYMENT SYSTEM AND
FOR EFFECTING THE PAYMENT THEREOF**

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1 **SYSTEM FOR DEPOSITING AND SUBMITTING COMMINGLED PAPER**
2 **AND ELECTRONIC FINANCIAL INSTRUMENTS INTO THE PAYMENT**
3 **SYSTEM AND FOR EFFECTING THE PAYMENT THEREOF**
4

5 **RELATED APPLICATIONS**

6 This application is a continuation-in-part of co-pending Application for United
7 States Letters Patent Serial No. 08/620,218 filed on July 11,1996, now allowed, which in
8 turn is a continuation in part of Application for United States Letters Patent Serial No.
9 08/507,856 filed on July 27, 1995, now United States Letters Patent No. 5,583,759 a
10 continuation of Application for United States Letters Patent Serial No. 08/156,190 filed
11 on November 22, 1993. Each application has the same inventor and assignee as the
12 present invention and all are incorporated herein by reference for all purposes.

13 **FIELD OF THE INVENTION**

14 The present invention relates generally to the processing of checks, electronic
15 payment instructions (EPIs) and other cash items (collectively "financial instruments")
16 presented to a depository bank by a payee for collection. In particular, the present
17 invention relates to a mechanism and system for expedited processing of checks, EPIs
18 and cash items by a payee and a depository bank to reduce the time within which such
19 items are paid, or returned, by the payor bank on which such items are drawn.

20 This invention relates to a system for the coordination of the physical transport
21 and/or electronic transmission of financial instruments with the electronic processing of a
22 deposit by the payee of the instrument into a collecting and clearing bank. The financial
23 instruments, whether they are in paper or electronic form, are prepared for submission
24 into the check payment system. The deposit and collection of funds represented by the
25 financial instruments is expedited.

1 In the prior art, the deposit and payment of a check tendered for an amount due is
 2 effected in accordance with well established traditional procedures. The drawer (the
 3 check writer) establishes a checking account containing funds with a bank. A check is
 4 written against the drawer's account in favor of the payee. The payee indorses the check
 5 and deposits the check in the payee's account at the bank of first deposit for collection.
 6 That bank handling the payee's account and the deposited check presents the check
 7 through the check payment system to the drawer's bank for payment. This bank in turn
 8 debits funds from the drawer's account, and typically archives the check or a copy of the
 9 check and/or returns the physical check to the payor, and the cycle is thus completed. In
 10 the sequence of check handling, a check transferee remits, or is responsible for, the funds
 11 represented by the check to its transferor if the check is honored by the drawee.

12 The multiple steps in the process and the physical handling of checks (used as a
 13 term herein to refer generically to a financial instrument in paper form) involve a period
 14 of "float" time for the funds represented by the check. Recent banking regulations have
 15 shortened the traditionally permitted times for check processing and collection.

16 The receipt of 10,000 to 1,000,000 or more checks or EPIs (used as a term herein
 17 to refer generically to a financial instrument, or payment instruction to deliver value
 18 equivalent to cash, in electronic form) drawn on numerous different banks is not unusual
 19 for many large businesses such as credit card issuers, utilities, mail order processors, and
 20 other large commercial entities. In situations where large numbers of checks and EPIs
 21 are involved, the handling of individual checks and EPIs and effecting their posting,
 22 deposit and clearing is a complex multiple step process.

1 This invention expedites the processing of a deposit by the payee of a paper or
 2 electronic instrument or payment order into a collecting and clearing bank (referred to
 3 generally as the payee bank, bank of first deposit, or depository bank). Such instruments
 4 and payment orders are prepared, processed, and submitted into a payment system such
 5 as the Federal Reserve or private clearing houses. The deposit and collection of the funds
 6 represented by these instruments are expedited according to the system of the present
 7 invention. Benefits of the present invention are realized by banking customers that
 8 receive as payees large numbers of payments to process on a continuing basis, such as
 9 utilities, bill payment companies, credit card companies, mail order processors, or other
 10 large commercial entities.

11 Typically in the prior art involving checks, the deposit and payment of a check
 12 tendered to a payee for an amount due is effected in accordance with traditional
 13 procedures for paper-based processing. The drawer (the check writer) establishes an
 14 account containing funds with a bank of the drawer's choice (the drawee bank or the
 15 payor bank). A check or similar financial instrument is written against the drawer's
 16 account in favor of the payee and physically delivered to the payee, usually by mail
 17 accompanied by the payor's invoice or a payment stub provided to the check writer that
 18 provides information about the check writer's account with the payee. The payee
 19 typically indorses the checks and deposits the checks in the payee's account at its
 20 depository bank or bank of first deposit for processing through the payment system for
 21 ultimate presentment at the check writer's payor bank for payment of the funds
 22 represented by the instrument. Internal accounting procedures of the payor reconcile the
 23 invoice and the payment with the payor's account with the payee. Upon receipt of the

check, the payor bank debits funds from the drawer's account, and may archive the check or a copy of the check, and/or return the check to the check drawer. Thus, the payment cycle is completed, typically with the paper check or financial instrument making the complete cycle from drawer to payee, to depository bank, through the check clearing system to the payor bank for archival storage and/or return to the check drawer. The processing of EPIs is generally analogous, beginning with a payor's instruction, or a payee's instruction on behalf of the payor, to the institution where the payor's account is maintained to initiate a payment of a specified fund amount from the payor's account at the institution to the payee with regard to a specified payee account. The institution's account statement to the payor will usually report the payment amount, date and payee for an EPI in a manner comparable to an entry with regard to a paper check:

In the conventional check clearing systems, the payee first indorses a check and delivers the check for deposit in the payee's account at a bank. The depository bank indorses for its own account the checks it receives, and sorts and bundles the checks. The depository bank prepares a cash letter for each bundle of checks sorted, or a cash letter that accompanies a group of check bundles. A cash letter may accompany a single bundle of checks or more than one bundle of checks. A typical cash letter contains routing information, the number and total dollar amount of the checks in a particular bundle, and optional additional information. The cash letters and check bundles are then introduced into the payment system.

The traditional multiple steps in the processing and physically handling checks, and in the preparation and transmission of cash letters, result in the float of funds represented by the check. Float is the time cost of money following deposit of the check

1 by the payee at the depository bank until actual payment of the funds is made by the
2 payor bank from the check drawer's account and those funds become available for use by
3 the payee. If the check is dishonored by the payor bank, the check is returned through the
4 clearing system in reverse direction, directly or indirectly, from payor bank to depository
5 bank in order for the depository bank to debit the payee's account for the dishonored
6 check. The route of the dishonored check from payor to depository bank need not
7 precisely retrace the route of the check from depository bank to payor bank, but may be a
8 direct return from payor bank to depository bank, or may follow an indirect route.
9 Dishonored checks are typically caused by insufficient funds in the drawer's account, a
10 stop payment order in place for the particular check, or other reasons.

11 There are three payment related conditions for funds deposited in a payee's
12 account at the depository bank. The first stage is a book credit of funds, denoting checks
13 deposited by the check payee to its account at the depository bank, as noted on the books
14 of the depository bank, but not necessarily available for use by the payee. The second
15 stage is available funds, credited to the account of the payee at the depository bank and
16 available for use or withdrawal by the payee. The time between book credit and
17 availability of funds is determined by federal regulation, bank policy, and/or negotiated
18 terms between the bank and its customers. The third stage is collected funds in which the
19 deposited check has been honored by the payor bank and all risk of return or dishonor is
20 eliminated. The most certain policy with regard to funds for a depository bank is to make
21 funds available, or withdrawable, only when they have been collected. Reducing the time
22 between the book credit and the collection of funds is advantageous to bank customers, to
23 the banks and to the business community in general by making funds more quickly

1 available for productive economic uses. Faster collection is an object of the present
2 invention.

3 In the usual sequence of check handling, every transferee, in the sequential chain
4 of the check transit from the check drawer to the payee and ultimately to the payor bank,
5 the previous party from whom the check is received is responsible for collection and
6 payment of the check. For example, the payee is responsible to the bank of first deposit,
7 the bank of first deposit is responsible to the next bank, and so on. The time between
8 book credit of a check and its collection (or dishonor) is reduced by the present invention.

9 Reduced float is advantageous to the payee because it results in the expedition of
10 collected funds into the payee's account. Traditional banking practices may inherently
11 delay the ability of the payee to withdraw funds represented by the check presented by a
12 payee for collection until the depository bank makes certain that the funds have been
13 collected at the payor bank from the drawer's account. Since the large majority of checks
14 presented for payment are honored by the payor bank, banking practice does not send a
15 notice honoring a check, only notice of dishonor. To insure against risk of loss to the
16 depository bank by a payee withdrawing funds not subsequently collected from the
17 drawer's account at the payor bank, banking practice requires a waiting period sufficient
18 to insure that a dishonored check would be made known to the depository bank in time to
19 reverse the depository bank's book credit of the funds to the payee's account and to
20 deduct the uncollected funds from the amount of the book credit. Use by the payee of
21 subsequently uncollected funds is, at best, an interest-free loan to the payee even when a
22 solvent payee promptly redeposits the uncollected amount in its account at the depository
23 bank. At worst, the entire amount of a check could be lost if it is uncorrectable. Recent

1 banking regulations, such as Federal Reserve Regulation CC, mandate a shortened time
2 during which a payee must wait for access to its deposited and credited funds. Thus,
3 expedited procedures for processing and collecting checks reduce the risk of loss to a
4 depository or subsequent collecting bank through dishonored checks. Expedited
5 procedures also benefit the payee-depositor by permitting the depository bank more
6 promptly to release funds for payee use, offering customers more effective cash
7 management.

8 The receipt of 10,000 to 1,000,000 or more checks or EPIs within a predetermined
9 period drawn on numerous different banks is not unusual for large businesses such as
10 credit card issuers, utilities, and mail order processors. In situations where large numbers
11 of payments are involved, the handling of individual checks and EPIs and effecting their
12 posting, deposit and clearing is a complex multiple step process, additionally complicated
13 for the recipient payees of such checks, because a payment identifier, a stub, invoice,
14 order form or the like is usually enclosed along with each payment check or is associated
15 with an EPI record. With paper instruments, the payee must open each envelope, and
16 record, reconcile and separate the payment stub from the check, send the payment stub
17 for archival storage (such as in microfilm or electronic media) or destruction, and send
18 the check to the payee's bank for deposit, collection and credit to the payee's account
19 through the check payment system. For EPIs an analogous record processing sequence is
20 required, although physical handling is eliminated. In both instances, however, the payor
21 most often receives a tangible record of the payment, such as an entry in the succeeding
22 account statement from the payor's financial institution and/or from the payee.

1 There exists a need for a system whereby the conventional deposit and collection
2 of funds represented by a check or other financial instrument, whether the instrument be
3 paper or electronic, may be expedited and the internal processing thereof made more
4 efficient, particularly for businesses that regularly receive large numbers of checks EPIs
5 and other forms of payments from their customers. The invention eliminates repetitive
6 processing steps and begins the banking process at the payee's point of receipt as an
7 adjunct to the payee's internal accounting.

8 Lock box or other means of collection consolidation and acceleration known in
9 the prior art do not achieve the efficiency of the present invention. Typical lock box
10 services, offered by cash management divisions of commercial banks or other entities,
11 commonly entail routing customer payment checks to the payee through a designated
12 post office box. The payments would generally be collected from a post office box by
13 the bank or cash management service at predetermined time intervals (e.g., several times
14 a day) and removed from envelopes. The payment stubs are routed to the payee for
15 accounting while the accompanying checks, credited to the accounts associated with
16 particular stubs, are routed to the depository bank to begin the customary collection
17 process. While this procedure achieves an efficiency of scale by aggregating and more
18 rapidly depositing customer checks to the account of the payee, payment stub processing
19 by the payee, paper check processing by a lock box manager or bank, and the physical
20 transportation of both between lock box location, payee and depository bank and their
21 final, physical processing in the check payment system are still conducted
22 conventionally, slowly and repetitively.

A variation of a lock box procedure is the Payment Consolidation Service offered by NBD, N.A. of Detroit, Michigan. In this procedure, invoice payments by check are sent directly to the depository bank which handles the accounting on behalf of the payee. The bank transmits certain customer accounting information electronically to the payee. Certain consolidated summaries may also be prepared by the depository bank on behalf of its customer, the check payee. While such a consolidation service may shift certain aspects of the customer invoice payment accounting function from the payee to the bank, the system otherwise employs conventional bank processing procedures for the physical sorting and transport of checks in the check payment system.

The present invention is directed to the bank customers (payees) who maintain customer accounting functions internally. For such bank customers, the present invention permits the payee to adapt and coordinate internal bill payment, accounting, and check and EPIs processing procedures with procedures that present payments into the payment system for collection in instances where paper and electronic payments are commingled.

Stephens et. al., United States Letters Patent 5,237,159, describes electronic means for the preparation of various electronic files containing check and depositor information in a form suitable for rapid verification, transmission, and comparison with paper checks when the checks later overtake the electronic transmissions in the check clearing process. The present invention is directed not to specific forms of electronic formatting and arrangement of the check or EPI information for rapid electronic transmission, as is Stephens et. al. Rather, the present invention is directed to an integrated system involving predetermined processing steps, beginning at the point of receipt, which facilitate payee internal accounting for the checks and EPIs it receives and

which expedites the flow of payment and cash letter information through the payment system as a bank of first deposit monitors the payee's account at the bank with regard to the payments received, making use of any suitable means for electronic file arrangement and transmission.

A recent occurrence with payments is that checks are being supplanted by electronic payment orders such as ACD payment, automatic checking debit, and third-party payment processing, such as by CheckFree®, and the payment payee will receive a commingled mixture of paper and electronic instructions causing ultimate payment to be made to the payee from a check writer's or bill payor's account. Debit instructions against a payor's account may arise from paper checks or electronic instructions both of which as noted above for purposes of this application, are considered "financial instruments".

In addition, the truncation of the physical handling of paper instruments at some point in processing, and the substitution of an electronic record in lieu of the physical paper check at a point in the payment and clearing process is increasingly being implemented.

Thus there exists a need for a system whereby the conventional deposit and collection of funds represented by a check, EPI or other financial instrument may be simplified and expedited, particularly for large business institutions such as public utilities, mail order processors, and the like which receive large numbers of payments in the form of paper instruments or electronic payment orders on a regular basis.

It is an object of this invention to provide such an expedited check deposit and EPI collection mechanism and to reduce the amount, complexities and requirements for

1 payment of funds represented by paper and electronic financial instruments from a
2 payor's account. It is a further object to eliminate duplicative data capture steps and
3 multiple handling involved in the payee's and the bank of first deposit's handling of the
4 same instrument.

5 SUMMARY OF THE INVENTION

6 The foregoing objectives are achieved in an integrated system for effecting the
7 deposit, settlement and submission of financial instruments into the payment system for
8 collection of funds. The financial instruments received by a payee at a location remote
9 from the payee's collecting and clearing bank are presented for payment to the multiple
10 institutions on which the instruments are drawn. A sorter at a first location established by
11 the payee receives the financial instruments and sorts the instruments according to the
12 predetermined sort pattern categories determined by the payee's collecting and clearing
13 bank. Indorsements on behalf of the payee and the collecting and clearing bank with
14 respect to each instrument received are applied to each instrument by a printer. The
15 sorter further assembles the sorted instruments into discrete groups with respect to the
16 predetermined sort pattern categories and associates one or more cash letters with each
17 assembled group of instruments. A communication link is established between the first
18 location and the collecting and clearing bank which reports to the collecting and clearing
19 bank information in the cash letters in anticipation of a deposit in the payee's account
20 corresponding to the cash letter.

21 The present invention also includes an electronic means which transmits payment
22 information regarding groups of instruments and the one or more cash letters from the
23 first location into the check payment system. A central processing unit and

1 communication link predetermines the timing and monitors the transport of the sorted
2 checks. The processing unit also coordinates the checks' deposit with the collecting and
3 clearing bank in a sequence coordinated with the timing of a settlement of accounts in the
4 check payment system. The invention includes alternative embodiments involving a
5 bank of first deposit and a bank of second deposit.

6 The present invention comprises an integrated system for effecting the efficient
7 submission of checks and other financial instruments into the payment system for
8 collection of funds. The financial instruments are received by a payee at a location
9 remote from the payee's collecting and clearing depository bank and are presented for
10 payment to the multiple institutions on which the instruments are drawn. In one
11 embodiment, electronic scanning means at a first location established by the payee
12 receives the financial instruments, scans and extracts necessary data therefrom including
13 the data of the magnetic ink character recognition (MICR) line of the instrument, adds
14 necessary data such as the amount and a document identification number to the electronic
15 information associated with each check, and sends this electronic information to the
16 payee's depository bank for further electronic sorting and processing both with regard to
17 the introduction of the checks into the payment system and the crediting of funds
18 represented by the checks to the payee's account at the bank. In this first embodiment,
19 the paper financial instruments are typically imaged (electronically, digitally, optically,
20 on microfilm or disk, or otherwise) for archival storage at the payee's location remote
21 from the payee's depository bank, substantially contemporaneous with the capture of the
22 financial or other information on the instrument. The paper instrument itself may then be

1 disposed of, eliminating the need for any additional mechanical sorting, indorsing or
2 imprinting by either the payee or the payee's depository bank.

3 Another embodiment of the present invention sends the paper checks after
4 processing at the point of receipt from the payee's location into the check clearing and
5 collection system. Mechanical sorting of the paper checks is performed at a first
6 (typically the payee's) location according to predetermined sort pattern categories
7 specified by the payee's depository bank. Indorsements on behalf of the payee and the
8 depository bank with respect to each instrument received are applied to each instrument.
9 Other information such as the amount and/or a document identification number may also
10 be imprinted on the instrument. In the sorting process, the mechanical sorter assembles
11 the sorted instruments into discrete groups with respect to predetermined sort pattern
12 categories and associates one or more cash letters with each assembled group of
13 instruments according to categories determined by the payee's bank of first deposit. A
14 communication link is established between the payee's location and the depository bank.
15 Information pertaining to the checks and/or the cash letters in anticipation of a deposit in
16 the payee's account corresponding to a cash letter (or cash letters) is transmitted from the
17 payee to the collecting and clearing depository bank. An electronic means transmits
18 payment information regarding the groups of sorted instruments and the one or more cash
19 letters from the payee's location into the check payment system on behalf of the payee's
20 depository bank.

21 A central processing unit and communication link determines the timing of check
22 transport and information transmissions according to criteria specified by the depository
23 bank, consistent with schedules appropriate to the check payment system, and monitors

the transit of the sorted checks. The processing unit also coordinates information about the deposit of funds represented by the checks in the payee's account at the depository bank in a sequence coordinated with the timing of settlement in the check payment system according to a schedule determined by the depository bank. It is an object of the present invention to provide an expedited funds deposit and collection mechanism for checks and other financial instruments received by a payee. A further object of the present invention is to reduce costs of collection and deposit of paper instruments on behalf of the payee and payee's depository bank.

Another object of this invention is to reduce the complexities and requirements for physical transport of financial instruments where paper checks and financial instruments are involved and to reduce the physical transport per se of checks in the collection process.

It is a further object of the present invention to eliminate duplicative data capture steps and multiple handling involved in the payee's and the bank of first deposit's handling of the same payment and to coordinate the payee's internal invoice accounting system with the submission of checks and/or EPI received by the payee in the payee's system resulting in efficiencies in account processing and in funds collection.

Other objects of this invention include the elimination of duplicative processing associated with financial instruments and payment stubs or electronic identifier records which accompany them, the reduction of errors, adjustments, rejects, balancing time, item handling and personnel costs.

These and further objects of the invention will be more readily understood with reference to the following description of the preferred embodiment taken in conjunction with the figures in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a diagram showing the processing of payment checks from the payee into the payment system when physical handling of the checks is truncated and electronic files or records of the checks are substituted. The electronic records and cash letter are submitted by the payee into the payment system on behalf of the bank of first deposit for ultimate payment from the account of the check writer, as such activities are coordinated by processing means at locations of the check payee and the depository bank.

Figure 2 depicts an alternate system involving the truncated processing of checks useful in correspondent banking relationships.

Figure 3 is a chart depicting the processing of commingled checks and EPIs, and the electronic transfer of information derived therefrom, from the payee to the depository bank and into an electronic payment system / clearing house resulting in the ultimate collection of funds from the account of the payor, as such activities are coordinated by processing means at locations of the check payee and the depository bank. Paper checks are not delivered into the payment system by the payee or depository bank in this embodiment and handling of the checks is truncated at the payee site.

Figure 4 depicts an embodiment in which commingled payments are delivered from the payee into a payment system capable of effecting settlement of both paper and electronic instruments.

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1 **DESCRIPTION OF THE PREFERRED EMBODIMENT**

2 In brief a system is provided which structures the processing mechanisms for
3 checks and EPIs to expedite (1) the processing of payments; (2) the submission of the
4 checks and EPIs for payment into the payment system and (3) the deposit of funds
5 represented by the checks and EPIs into a depositor's account.

6 In the system, a payee that receives a large number of payments drawn on
7 numerous different banks, will, at the instruction of the payee's depository bank (i.e., its
8 bank of first deposit), upon processing the payments in its own accounting records (such
9 as by recording a payment to a customer's account) sort the checks according to MICR
10 (Magnetic Ink Character Recognition) data, including routing transit number and
11 customer account number. The sort by MICR data may be in a sort pattern determined
12 by volume in a predetermined geographic area, the financial institution(s) on which the
13 checks were drawn, or the geographic or commercial area of a bank that will otherwise
14 accept a check for clearing and collection. EPI instructions include information
15 comparable to that derived from a standard MICR line on a check authorizing a debit
16 from a payor's account.

17 In addition to sorting received payments, the payee indorses the payment
18 instrument for its own account, and on behalf of its depository bank, which is the bank of
19 first deposit to which the physical check would be otherwise delivered. In a check, an
20 institutional indorsement is conventionally applied as a stamp that prints payment
21 instructions and the identity of the indorser on the reverse side of a check. Like
22 instructions are included with an EPI record or the truncated record of what was

1 formerly a physical check. The bank of first deposit is an agent for its depositor and
2 assumes liability for obtaining payment of the instrument in subsequent processing.

3 Following sorting and indorsement, the payee then delivers the payment
4 instruments on behalf of the bank of first deposit into the payment system along with a
5 cash letter in the name of the bank of first deposit, where the payments are cleared and
6 returned to the check writer's bank for ultimate payment against funds in the payor's
7 account, and the payor's account is appropriately debited. The " payment system"
8 includes clearing institutions such as the Federal Reserve Banks, correspondent banks,
9 The National Clearinghouse Association (described in United States Letters Patent No.
10 5,265,007), ACH and like mechanisms. By reason of its direct relationship to the
11 payment system, the collecting and clearing bank is a part of the payment system.

12 In the examples, the legend box appearing in Figure 1 indicates that physical
13 transfers are denoted by a solid line, electronic information about financial instruments
14 by a zig-zag line and data communication by a dashed line.

15 EXAMPLE 1

16 The system is illustrated in Figure 1 in which the check payee and bank customer
17 1 may be a public utility such as a telephone company. In this example, the payee is a
18 banking client of the bank of first deposit. Typically such a utility will receive from its
19 customers, C1, C2, C3, C4, C5, CN, etc., tens of thousands, if not hundreds of thousands,
20 or millions, of payments per month, drawn on numerous different banks, savings and
21 loans, credit unions or other demand account providers.

22 In the prior art of checking accounts, once the utility processed and indorsed
23 checks to reconcile its own and its customer's accounts, the utility would physically

1 transport to and deposit the indorsed checks with its depository bank 2 where the utility
2 maintained an account. The depository bank in turn would credit the utility's account for
3 the checks, and the depository bank, being the bank of first deposit, would separately
4 indorse the checks on its own behalf and collect the checks through the check payment
5 system 3, which leads to the ultimate payment of the check from the check writer's
6 account at banks B1, B2, B3 or BN.

7 In that process, the bank of first deposit would physically sort the checks received
8 from and deposited by the utility. Check sorting by MICR codes, the addition of the
9 check amount to the MICR line, and other facets of check processing, including MICR
10 code sorting by routing transit numbers, and the use of sorter machines, are known. The
11 sorted checks would then be delivered in a cash letter (i.e., a listing of checks and the
12 amounts of the checks drawn on a particular institution or group of institutions from a
13 particular area) into the check payment system where settlements with other financial
14 institutions on which the checks were drawn would be effected. Such a settlement
15 involves the physical transport and exchange of the checks, and a calculation of aggregate
16 amounts owing and payable by participants in either a bi-lateral or multi-lateral
17 settlement at a predetermined time. After settlement, the check payor's bank would
18 physically have custody of the check and would conventionally process the check for its
19 customer's account.

20 In contrast, the present system provides that the utility, in its own processing of
21 payments, which may be checks or EPIs, at a site distant from the location of the
22 depository bank, indorses the payments (1) on its own behalf and (2) on behalf of the
23 bank of first deposit where the utility or check payee 1 maintains an account for the

1 deposit of payments. In processing checks, the utility adds the check amount to the
2 information record derived from the MICR line and appropriate indorsement indicia such
3 as the indorsement by the payee and an indorsement on behalf of the bank of deposit.

4 The payments are sorted by the utility or check payee in accordance with
5 predetermined sort pattern categories selected by the depository institution; and, the
6 utility prepares an electronic cash letter in the name of the depository bank for each group
7 of payments within the predetermined sort category. Typically when an EPI is received,
8 the EPI is temporarily maintained in a buffer or memo post file or the like for batch
9 processing at a predetermined schedule typically determined by the depository bank.
10 Similarly the electronic records of check information, whether the checks will be
11 truncated or not, may also be maintained in a buffer or memo post file for batch
12 processing commingled with the EPI records. The sort may be by individual bank,
13 geographic location, clearinghouse affiliation or other criteria determined by the
14 depository bank. Physical handling of the checks is truncated and remaining only is the
15 electronic record of the check which in addition to the conventional MICR information,
16 may include an image, for example, of the payee in the payee field of the check as written
17 by the check drawer, optionally in a second electronic record of the payment useful with
18 the payee's internal accounting process, or transmitted through the clearing process and
19 returned to the payor in an account statement.

20 Upon the sorting and preparation of the cash letter, the utility or check payee 1
21 transmits, between the utility's CPU (Central Processing Unit) 13 and the depository
22 bank's CPU 14, payment information (usually in correspondence with MICR line
23 information (amount, bank routing number, customer account number, check number and

other predetermined information)) to the depository bank 2, and the bank thus has information for crediting the utility's deposit account for the funds represented by the payments and for other banking purposes with respect to the utility's account. The utility, or check payee 1, however, in lieu of actually transporting the physical checks to the depository bank 2 to make the deposit, truncates the checks and accompanying cash letters and continues the process electronically with cash letters and check records submitted directly into the payment system as an agent of the bank of first deposit. The direct transmission of electronic information into the payment system is depicted by line 10 in Figure 1 connecting payee 1 and payment system 3. An electronic image of the payment information may be created for subsequent display to the payor, for example, in the payor's periodic checking account statement, delivered as a physical document or electronically transmitted to the payor.

With reference to the Example, it is evident that improvements in efficiency and time, and a reduction in paper handling is achieved by the system, compared with the instances of physical handling and duplication in the prior art process. The conventional step of delivering the physical items to the bank of first deposit is eliminated; two indorsements of the check are applied at the same time, instead of twice at the different locations of the payee and the bank of first deposit; and truncation allowing down line electronic processing expedites clearing and payment in the payment system. The faster availability of funds to all payees in the clearing sequence is achieved. It is necessary, however, that the timing of steps in the present system be synchronized and coordinated between the depositor, the bank and the check payment system with respect to the indorsing and sorting of checks, the transmission of payment (check MICR) information,

the electronic submission of cash letters and check record information into the payment system, and the deposit, collection and verification of funds represented by the checks.

EXAMPLE 2

An alternative utilization of the invention is shown in Figure 2, where a collecting and clearing bank 10 is a provider of payment processing services to other correspondent banks or financial institutions, correspondent Bank #1, correspondent Institution #2, etc. Here, however, correspondent Bank #1 and correspondent Institution #2 receive, as the institutions of first deposit, payments received from their customers P1, P2, P3, PN, the payees of checks written by check writers/drawers C1, C2, C3, C4, C5, CN. Bank 10 is a bank of subsequent deposit that further submits the payments or checks received from the correspondent banks and institutions into the payment system for collection and clearing. This example is an illustration of the present invention whereby multiple smaller institutions that do not process the volume of instruments as a check payee 1, such as in Example 1, or larger institutions that typically outsource certain functions, may achieve the advantages of the invention through their utilization of a bank of second deposit, collecting and clearing bank 10.

At a location 17 remote from collecting and clearing bank 10, the checks from the customers of correspondent Bank #1, correspondent Institution #2, etc. are indorsed respectively in the names of correspondent Bank #1, correspondent Institution #2, etc. by indorser 11, on their own behalf as the bank or institution of first deposit. An indorsement is also applied to the checks by the indorser on behalf of bank of second deposit 10. The check amount is added to the MICR line. (The addition of check amount and indorsement information to the check are known elements of the check processing

routine). CPUs 15 and 16 associated with correspondent Bank #1 and correspondent Institution #2 respectively, provide a communication link with the remote location whereby check and settlement information available to the sorter of the bank of second deposit is exchanged. At the remote location, the indorsed checks are commingled and sorted by sorter 12 in accordance with predetermined sort pattern categories determined by bank of second deposit 10 and a cash letter is prepared in the name of bank 10 for each group of checks within the predetermined sort category. Electronic information about the checks and cash letter is transmitted from the indorsement and sorting site to bank 10 via CPUs 13 and 14 respectively, for use in bank 10's recording of the deposit of the checks in the respective accounts of correspondent Bank #1, correspondent Institution #2, etc., maintained at bank 10.

From the sorter site, the electronic cash letter information is delivered directly into the payment system and further physical handling of the checks is truncated. Although the bank 10 is the collecting and clearing bank for the checks of Bank #1, Institution #2, etc. , the physical checks are not handled by bank 10. Instead, the check deposits, clearings and collections are monitored by electronic communication links and CPUs 13 and 14 at the locations of the indorsement applier 11 and sorter 12 and collecting and clearing bank 10.

The preparation of the cash letters for the sorted checks that are delivered from the sorter directly into the payment system is in accordance with sort pattern criteria determined by the bank of subsequent deposit for collecting and clearing.

Truncation options useful with Examples 1 and 2 are described in more detail with regard to Figures 3 and 4. Thus, the controlled system described herein accelerates

the collection process by eliminating the need for, and the time consumed by, the physical transport of checks to the depository bank and the subsequent physical transport of the checks and submission of checks into the check payment system by the depository, or collecting and clearing bank and allows the commingling of EPIs with electronic records of physical instruments in the clearing and payment process. In the first example, dual sorting and dual capture of information by both the payee and a bank of first deposit is eliminated. Likewise, the need for repetitive sorting of the same instrument or data record by both the payee bank and the bank of first deposit is also eliminated when the collecting and clearing bank is a bank of second, or subsequent, deposit. The inter-relationship of the depository bank, or the collecting and clearing bank, with the sorter and indorsement applier is effected by electronic communications and a control system of processing computers at one or each of the bank and the sorter. The CPU at that location transmits MICR line data to the collecting and clearing bank. The cash letters for the sorted checks on behalf of the collecting and clearing bank are prepared at the remote customer's or sorter's location. Physical items or data records that would otherwise require double handling, first by the customer/depositor and then by the collecting and clearing bank are now singly handled at the point of sorting. Check handling and preparation for submission to the payment system are thus integrated.

As handling is reduced, redundancy is eliminated, cost is reduced and error caused by repetitive transfer and handling of numerous checks are also reduced. The payments are forwarded to predetermined sort pattern categories in the payment system according to the sort patterns established by the collecting and clearing bank. Hence, with reference to Example 1 and the local utility, most of the payments received by the

1 utility would likely be drawn on banks in the utility service area, and the clearing of the
2 checks would be effected through the local payment system. The collecting and clearing
3 bank, in a location other than that of the utility, maintains an electronic link for settlement
4 purposes for participation in that local payment system.

5 By contrast, the payee in Example 1 and the indorsement/sort service provider in
6 Example 2 also become the archive on behalf of the collecting and clearing bank for the
7 received checks in the event of truncation, as well as for itself, whereby each check
8 received by the payee is microfilmed or imaged and assigned a document identification
9 number or otherwise transformed into an electronic data record that may also include
10 images of a physical instrument. In Example 2, the sorter may also be the archive for
11 Bank #1, Institution #2, May 10, 1999., that are serviced by the collecting and clearing
12 bank.

13 Thus, the invention provides a system for effecting the deposit, settlement and
14 submission for collection of funds represented by financial instruments that are received
15 by a payee at a location remote from the payee's depository bank. The instruments are
16 presented for payment to multiple institutions in the check payment system.

17 A sorter, which is a well known machine in the banking industry, is placed at a
18 first location established by the payee. The sorter receives the tangible financial
19 instruments in high volume from the payee's customers. The sorter sorts the instruments
20 according to predetermined sort pattern categories determined by the depository bank.
21 Indorsements of the instruments on behalf of the payee and the depository bank with
22 respect to each check received are applied by a printer or stamping mechanism before,
23 during or after the sort process. The sorter will generally assemble the sorted instruments

1 into discrete groups with respect to the predetermined sort pattern categories. A cash
2 letter associated with each assembled group of sorted instruments is prepared by the
3 payee on behalf of the depository bank.

4 A communication link between the payee location and the depository bank
5 enables the payee to report to the bank the information about the checks in the cash letters
6 and permits the bank, upon receipt of the information to anticipate in the bank a deposit
7 in the payee's account corresponding to the cash letter(s). When the bank receives
8 confirmation that it has received credit for the cash letter through the check payment
9 system, it makes the funds available to the payee.

10 These physical means are coordinated by a central processing unit and
11 communication links between the parties involved in the payment process. In this
12 manner the timing of the physical transport of the instruments for submission into the
13 check payment system and/or the transmission of an electronic cash letter and associated
14 data records of individual payments is controlled and the delivery of the sorted payments,
15 whether in electronic or physical form, into the payment system is confirmed and
16 verified. The recording of the payments as a deposit in the payee's account with the
17 depository bank, or the collecting and clearing bank, is thus coordinated with the timing
18 of the issue of a credit to the bank when a settlement of the accounts represented by the
19 checks is received through the payment system. With physical instruments, the transport
20 of the instruments and the associated cash letters from the first location to a payment
21 system endpoint is effected by conventional ground or air delivery.

22 The present invention is a system for processing checks and other financial
23 instruments. A check payee, as an agent of the depository bank processes the checks at

1 their point of receipt as an adjunct of the payee's internal invoice accounting system. The
2 payee performs according to criteria and procedures mandated by the payee's depository
3 bank, at a location remote from the bank's conventional collection and deposit processing
4 facilities. The processes of the present invention expedite the processing of checks by the
5 payee and the payee's depository bank; the submission of the checks for payment into the
6 payment system; and the deposit and availability of funds represented by the checks into
7 a depositor's account.

8 **EXAMPLE 3**

9 Example 3 is an embodiment in which physical paper checks are not transported
10 from the payee's location. Appropriate information from the checks is extracted and
11 converted into electronic form for sorting, processing and transmission into and through
12 the payment system. The physical checks are disposed of, typically following imaging
13 and archival storage by electronic, optical, microfilm or other means at the payee's
14 location (or other location remote from the depository bank). This embodiment truncates
15 checks at the payee's point of receipt.

16 With reference to Figure 3, the check payee and bank customer 1 is a public
17 utility such as a telephone company, or other business entity receiving a large number of
18 periodic payments from numerous customers. In Figure 3, the drawers of the check or
19 other financial instrument (the customers of the payee) are denoted by C1, C2, C3, ... Cn,
20 collectively denoted by 31 in Figure 3. The check drawers (payors) are paying invoices
21 received from the payee and the checks are usually accompanied by a payment stub,
22 invoice containing information about the payee's account, or an order form or the like
23 containing relevant information about the identity of the payor and the purpose of the

1 payment. For the typical case in which the check payee (and bank customer) 1 is a
 2 utility, credit card company or other large commercial enterprise, there may be many
 3 thousands or millions of customers 31, submitting payments to payee 1, often
 4 periodically and typically monthly. The method of payment and delivery of payment to
 5 the payee, denoted by 32 in Figure 3, is typically via the mail. In-person delivery,
 6 commercial messenger, and other forms of delivery of checks to payee 1, are also utilized
 7 by some customers.

8 In the present invention, the check payee 1 typically receives these payments and
 9 associated statements through a functional component of the receiving organization
 10 known as remittance processing in retail organizations, or deposit processing when
 11 received by a bank. Item capture 33 in Figure 3 represents these functions. Item capture
 12 33 will typically occur at a location convenient to the payee's accounting functions 34.
 13 Check receiving and item capture functions may be located at strategic bill collection
 14 points within the payee's service region. Most typically, the check receiving and item
 15 capture function of the payee will compare a payment stub with the enclosed check and
 16 send the check on for further processing. The payee processes the payment stub
 17 commonly received along with the check further and the funds represented by the check
 18 are reconciled with the check drawer/payor's account. The stub may be stored in archival
 19 storage as paper, microfilm, etc., or otherwise used to account properly for the customer's
 20 payment. Payment stub processing and internal accounting procedures for the reporting
 21 and allocation of payments, are adjuncts of the funds collection system of the invention
 22 herein.

1 Figure 3 relates to an embodiment of the present invention in which paper checks,
2 or similar instruments are not forwarded by the payee for processing through the
3 depository bank or payment system. Because physical transport of checks is not
4 required, mechanical sorting of the paper checks received is not necessary. The
5 embodiment of Figure 3 uses electronic transmission of information related to
6 electronically sorted information about checks and EPIs received and electronic cash
7 letters related to the particular groups of sorted payments. Therefore, sorting,
8 reconciliation, etc., is effected by electronic means and paper checks are truncated and
9 have no need for mechanical processing or delivery.

10 Following receipt and item capture by the payee, the check will advance to
11 scanning and processing in the electronic scanning block 35 of Figure 3. In this step, the
12 check is scanned by a suitable reader. (This processing step may also include verification
13 of the data collected electronically by human operator comparison of the electronic data
14 with the physical check and the payment stub.) The data thus collected will typically
15 include the MICR (Magnetic Ink Character Recognition) data from the MICR lines of the
16 checks. The amount of the check and a date will also be collected, or an electronic image
17 of the check, or selected fields thereof (such as payee and/or amount, shown in the
18 checkwriter's own handwriting) (optionally verified by a human operator) will be made.
19 This data is included with the electronic record to be associated with each check and
20 represents data from which the transaction record conveyed to the check writer in
21 periodic statements of account is derived. In the typical practice of the invention,
22 electronic indorsements on behalf of the payee and the depository bank will be applied to
23 the electronic record of the check or EPI; a document identification number will also be

1 generated and added to the electronic record of the check to aid in subsequent location
2 and retrieval of the information concerning the particular check. This information
3 typically collected from the MICR line and the check amount is referred to as bank
4 information. The payment stub information comprises the information necessary to the
5 payee derived from the payment stub to reconcile the payment with the check payor's
6 account with the payee.

7 Because this embodiment does not forward paper checks into the payment system,
8 there is no need for the check amount to be added to the MICR line of the physical check,
9 as is a common procedure in current check processing operations. Amount imprinting is
10 rendered unnecessary by this embodiment of the present invention.

11 Figure 3 also shows the accounting function of the check payee 34 following the
12 electronic scanning of the data from the check 35 or the receipt of an EPI. Payee
13 accounting 34 may also include the processing of payment stubs directly from the payee
14 receiving item capture function 33 in place of, or in addition to, the processing of
15 information from the check. The information flow within the check payee's organization
16 from item capture 33 to the check payee accounting function 34 is a matter of payee
17 preference. Payee accounting 34 is electronically linked to the electronic scanning and
18 the electronic receiving, in the case of an EPI, function 35 via 34a, and is electronically
19 linked to the depository bank 2 via communication link 34b.

20 In Figure 3, box 36 indicates the creation of an image of the check for archival
21 storage 37 prior to possible disposition of the paper instrument 38. An image of the
22 physical check is created. This image is preserved and may be reproduced as a copy of
23 the check for purposes of signature comparison, amount verification, etc. if needed. The

1 image may be an optical or electronic gray-scale or color image of the check maintained
2 archival in storage in pixel-by-pixel digital, optical, magnetic, electronic, fully optical or
3 other storage technology from which information can be derived. Alternative storage
4 mechanisms include microfilm, video tape, laser disc or other tape or direct image
5 storage technology. This functional block 37 of Figure 3 is not limited to any particular
6 technical embodiment; a form of image of the actual physical check is stored, capable of
7 later retrieval, from which detailed information related to the check and its visual
8 appearance may be displayed. Following the storage of the check, disposal of the paper
9 instrument 38 may occur.

10 Disposal of the physical paper check (by destruction, recycling, etc.) 38 at the
11 location of the payee 1 occurs in one embodiment of the present invention. Terminating
12 the transport of the physical paper check at a point in the collection and clearing process
13 and eliminating the return of the check to the check writer is referred to as a "truncation"
14 of the check at that point beyond which the check is not physically sent. The check may
15 be physically destroyed or placed into archival storage. In practice, the physical checks
16 may not be destroyed, but may be placed in warehouse storage for a period determined by
17 banking policies. Disposal 38 of the paper checks may involve either the physical
18 destruction of the instrument or archival storage of the paper check in addition to imaging
19 36 of the check and the storage 37 of the image in a space-efficient form.

20 Other truncations are consistent with the present invention resulting in more
21 effective check collecting processes for both the payee and the depository bank.
22 Truncation at the point of sale in which the information transmitted to the bank of first
23 deposit is an EPI is an embodiment in which the MICR line, and check amount (and

1 optional additional information) is extracted from the check for electronic transmission.
2 For retail establishments such as grocery chains and the like that receive large numbers of
3 point of sale checks, the present invention is applicable with the location of the payee
4 being the point of sale check receiving establishment. Point of sale capture may, but
5 need not necessarily, include imaging of the check.

6 Other truncation schemes are possible in which the physical paper check is sent
7 beyond the payee to the depository bank, or to the payor bank, or elsewhere in the check
8 collection system.

9 The image function 36 is depicted in Figure 3 separately from the electronic
10 scanning function 35 for clarity in graphical depiction. The electronic scanning for
11 extraction of the data from the MICR line, etc., may be combined with the imaging of the
12 check to reduce check stacking, feeding, positioning and other mechanical manipulation
13 steps for the proper items. Whether scanning 35 and imaging 36, in Figures 3 and 4, are
14 combined in one piece of equipment, or more than one, is a matter of convenience.

15 In Figure 3, the image 37 is stored at the payee's location in an archival storage
16 facility 37. However, this image of the check may also be transmitted electronically to
17 the bank along with the other information extracted from the check. The amount of
18 information in the image is typically greater than the transactional information extracted
19 from the MICR line and is added to the electronic record of the check. Thus, transmission
20 of the image requires greater communication capacity than transmission of the
21 transactional check data alone.

22 The information from the electronic scanning 35 performed at the payee's location
23 is transmitted via a suitable communication links 39 and 39a to the depository bank 2. At

the depository bank, the appropriate adjustments of the payee's account balances by the depository bank are carried out 40. The payee's account is credited with the appropriate amounts as such are compiled by the payee and the information thereof is received electronically from the payee. The electronic check information is sorted and routed via an appropriate electronic communication link 39b with appropriate electronic information added thereto to insure proper routing through the payment and clearing system to the appropriate payor bank. Electronic information of the sorted checks transmitted for particular payor banks, the equivalent of a cash letter, is included with each electronic bundle of checks and EPIs.

The electronic check information as sorted, grouped and annotated 41 by the depository bank is sent via an appropriate communication link 42 into the payment system 3. The payment system 3 includes clearing institutions such as the Federal Reserve Banks, correspondent banks, The National Clearinghouse Association (described in United States Letters Patent No. 5,265,007), the electronic check clearing house organization (described in Stephens et al., supra), and like mechanisms. Having a direct relationship to the check payment system, the collecting and clearing depository bank 2 is considered a part of the check payment system.

In Figure 3, the payment system 3 is electronic and receives EPIs, electronic check records and associated electronic cash letters and bundles from depository bank 2 and other banks of first and subsequent deposit (not depicted on Figure 3) intended for various payor banks, B1, B2, B3 ... Bn, , collectively denoted as 43 in Figure 3. The information from the payment system 3 reaches the appropriate payor banks 43 for proper debiting of the accounts of the payors 31 thus completing the payment cycle. In

1 the event of dishonor of a payment by a payor bank, the process reverses as to the
2 collection of the dishonored payment, and this information may be transmitted
3 electronically back through payment system 3 (or by other direct means) to depository
4 bank 2 for unwinding the transaction and for debiting of the payee's account as to the
5 dishonored payment.

6 Submittal of a customer account statement to customers C1, C2, ... ,Cn can be
7 sent electronically, as shown with regard to C1 and C3 of Figure 3, or by conventional
8 paper copy as shown with regard to C2. In either case, the account statement may
9 include an image of the check or images of selected portions of the check.

10 Modifications of the system of Figure 3 are apparent to those with skill in the art.
11 For example, electronic sorting, routing, grouping and preparation of electronic cash
12 letters may be merged completely at the payee's location 1 with the depository bank's
13 function 41 comprising the extracting of cash letter information as the electronic
14 transmission passes through communication links 39 and 42. The electronic information
15 thus extracted by the depository bank would enable the updating of the depository bank's
16 account balances for the payee. Checks or EPIs written by payors C1.... who are also
17 customers of the depository bank 2 would be cleared and appropriate fund transfers made
18 immediately at the depository bank. Conversely, minimal processing may be performed
19 at the payee's location and the steps of item capture, scanning, imaging, sorting, and
20 depositing into the payment system could be performed at a different location. The
21 image 36 is transferred via a communication link 39 from payee 1 to depository bank 2
22 for financial information processing and archival storage. This embodiment may be
23 particularly suitable when the payee is a retail establishment receiving numerous point of

1 sale checks but lacking internal accounting facilities. In any event, when electronic
2 records are sorted and sent to the payment system, the data required for truncated checks
3 and EPIs will be the same, although check records may have additional record fields,
4 such as for a payee image and the like.

5 The timing of transmissions between payee 1, depository bank 2, and the payment
6 system 3, typically occurs according to predetermined schedules established by the bank,
7 the payee customer of the bank and/or the payment system itself. Communications
8 between payee 1, depository bank 2, and the payment system 3 will be under the control
9 of a central control / processor unit 14 according to criteria established by the depository
10 bank. This control unit coordinates, synchronizes, times and avoids interference in and
11 among the various communications involving the depository bank 2 and the payee 1, and
12 insures compliance with schedules necessary for the check payment system.

13 Figures 3 and 4 show a single control unit 14 at the location of the depository
14 bank 2. Alternatively, it may be convenient to have the control function at the payee's
15 location 1 or to split the control function between processors located at the payee's
16 location, the depository bank's location or elsewhere, provided, however, that the bank
17 determines the control, coordination and transmission protocols and the submission and
18 collection of funds over the payment system 3.

19 The present invention depicted in Figure 3 is contrasted with the traditional check
20 payment and processing procedures in which funds represented by checks received for
21 payment of an amount are matched with the customer's invoice or account internally and
22 the physical paper checks are indorsed and physically transported to the depository bank
23 for deposit in the payee's account. Conventionally, the depository bank repeats the

1 reading, sorting, indorsing and packaging the physical checks for submission into the
 2 payment system according to the depository bank's preferred sort pattern categories.
 3 Cash letters are then prepared by the depository bank, associated with the bundles of
 4 sorted checks and together they are introduced into the payment system to complete the
 5 processing. The invention depicted in Figure 3 does not require physical sorting,
 6 bundling or indorsing of the paper checks or transportation of the physical checks from
 7 the payee to the depository bank. Only a single mechanical processing of the physical
 8 checks during the scanning operation 35 at the payee's location is required and the
 9 electronic check records may be bundled with EPIs for sorting, clearing and subsequent
 10 processing.

11 EXAMPLE 4

12 In the example depicted in Figure 4, electronic transfer and processing of
 13 payments occur and paper checks follow at some later time for confirmation,
 14 reconciliation and storage by the payor bank and/or for return to the drawer. Paper
 15 checks in this system are truncated at a point beyond the bank of first deposit, usually at
 16 the payor bank, where the checks are stored or imaged for archival storage and then
 17 disposed of.

18 In the example of Figure 4, checks or other paper financial instruments are
 19 received by payee 1 from numerous check writers 31 via the mail or other delivery means
 20 32 as described in connection with Example 3. The checks are received at item capture
 21 site 33, scanned 35, accounted for 34, and imaged 36, in a manner explained with respect
 22 to Example 3. Because the physical paper checks are preserved, imaging and/or storage

1 of the images are not necessary unless the image is transmitted along with other bank
2 information and used for long term archival storage.

3 The processing steps, and modifications thereto, are essentially unchanged in
4 Example 4 when compared with the all-electronic processing of Example 3. Electronic
5 information scanned from the check at 35 and EPI data otherwise received, is transmitted
6 via communication link 39 to depository bank 2 for sorting, processing, and bundling 41.
7 This information is entered in the payee's account 40. The bundled electronic payment
8 information and accompanying electronic cash letters are forwarded into the payment
9 system 3 via communication link 42 under the bank's control through processor 14, all
10 essentially as described in connection with Example 3.

11 The embodiment of Example 3, however, is one in which, for checks, the physical
12 paper check is presented through the payment system 3 for delivery to one of the payor
13 banks 43 (or otherwise truncated at some point within the payment system beyond the
14 check payee). The paper check follows the electronic information previously transmitted
15 via 42 into the payment system 3. Thus, this embodiment is a paper-to-follow system
16 providing rapid processing of the essential financial and accounting information
17 represented by electronic records of the checks. The physical checks follow thereafter.
18 The paper check in this embodiment is processed by indorsing, sorting, bundling, routing,
19 and the generation of a physical cash letter to accompany the physical bundle (or
20 bundles) of checks through the payment system. Indorsements to checks on behalf of the
21 payee and the bank of first deposit are applied to the check by a payee at the payee's
22 location.

In Figure 4, electronic records of check data and EPIs and paper checks are shown to be sorted, respectively, by electronic sorter 41 and mechanical sorter 50 in sort pattern categories determined by depository bank 2. The depository bank may require electronic records or physical checks as formats which are sorted according to pattern categories such as check volume in a predetermined geographic area, the financial institution(s) on which the checks were drawn, the geographic or commercial area of a bank that will otherwise accept a check for clearing and collection, or other sort pattern categories. The various categories into which the physical checks are thus sorted are denoted schematically by pockets 51 in sorter 50 and in its electronic analogue in electronic sorter 41 of Figure 4. In this embodiment, physical processing 50 will typically include indorsing the checks, both for the payee and for the depository bank at the payee's location. An institutional indorsement is conventionally applied as payment instructions and includes the identity of the indorser on the reverse side of a check. The mechanical sorter 50 is also electronically linked to the electronic sorter via 12a so that check and EPI data may be commingled.

The mechanical processing of checks at payee's location 50 may also include the generation of physical cash letters 52 to accompany the bundles of sorted checks into the payment system 3. The bundles of checks with accompanying cash letters are physically transported into the payment system by means of any conventional, customary or useful transport means 53 for processing by the payment system 3 according to conventional procedures.

Here, the electronic processing of the funds represented by the checks precedes, and typically does not wait for, the arrival and processing of the physical paper checks.

1 Thus, the information relating to the potential availability of drawer funds in the payor
2 bank 43 is expeditiously made known through the payment system electronically to the
3 depository bank 2. The paper checks follow directly from the payee, on behalf of the
4 depository bank, directly into the payment system, also in an expedited manner according
5 to the present invention, since separate sorting and indorsing by the payee and the
6 depository bank are combined into a single sorting and indorsing function 50 at the
7 payee's item capture facility. The separate transport of paper checks to depository bank
8 2 is unnecessary. The timing of steps is synchronized and coordinated with respect to (a)
9 the check payee 1 and the bank of first deposit 2 via communication link 39 (b) the check
10 payment system 3 with respect to the indorsing and sorting of checks 50 and 51 (c) the
11 transmission of check MICR information via communication link 42 and the submission
12 of doubly indorsed checks into the payment system 3 via physical transportation 53 and
13 (d) the payment of funds represented by the checks (or the dishonor of a check) by payor
14 banks 43. Coordination under the direct control of the depository bank, according to
15 criteria established by the bank, insures availability to the payee of deposited funds in
16 compliance with federal regulations, depository bank policy, and/or contractual
17 agreement between the payee and the depository bank.

18 In the prior art, once the check payee 1 processed and indorsed the payment
19 checks received to reconcile its own and its customer's accounts, the payee would
20 physically transport the indorsed checks to its depository bank 2 where the payee
21 maintains an account and the checks would be deposited to the credit of the payee's
22 account. The depository bank, being the bank of first deposit, would separately indorse
23 the checks on its own behalf and submit the checks into the check payment system

1 resulting in the ultimate payment of funds represented by the checks from the check
2 writer's account at payor banks (or the dishonor of the check). In that process, the bank
3 of first deposit would apply its own indorsement to the checks already indorsed by the
4 payee and would physically sort the checks and prepare any accompanying cash letter for
5 delivery into the check payment system where settlements with other financial
6 institutions on which the checks were drawn would be effected. Such a settlement
7 involves the physical transport and exchange of the checks, and a calculation of aggregate
8 amounts owing and payable by participants in either a bi-lateral or multi-lateral
9 settlement at a predetermined time. After settlement, the payor bank would physically
10 have custody of the check and would conventionally process the check for its customer's
11 account.

12 In contrast, the present system provides that the check payee 1 in its own
13 processing of the checks, at a site distant from the location of the depository bank 2,
14 indorses the check for payment both on its own behalf and on behalf of the bank of first
15 deposit where the check payee 1 maintains an account and deposits the funds represented
16 by the check. In its processing of the checks, the payee will typically add the check
17 amount to the MICR line and date information about the check. The indorsed checks
18 and/or their electronic records are sorted by the check payee in accordance with
19 predetermined sort pattern categories 51 selected by the depository bank. The payee
20 prepares a cash letter, in electronic format, or in physical format 52 when the checks are
21 physically sent, in the name of the depository bank for each group or bundle of checks
22 within the predetermined sort category.

1 The particular order of operations shown in Figure 4 is not intended to exclude
2 other equivalent sequences. For example, the electronic scanning of the checks 35 may
3 be performed by the same physical equipment at substantially the same time as the
4 mechanical sorting and indorsing 50 and 51, and the preparation of cash letters 52. Other
5 modifications will be obvious to those of skill in the art.

6 Improvements in efficiency and time, and a reduction in paper handling is
7 achieved by the system of the present invention as compared with the repetitive instances
8 of physical handling, multiple transportation, and duplicative sorting and indorsement
9 encountered in the prior art. Delivery of physical items to the bank of first deposit is
10 eliminated. Two indorsements of the check are applied at the same time, instead of twice
11 at the different locations of the payee and the bank of first deposit. The payee/customer
12 applies the bank endorsement on behalf of the bank. The faster collection of funds, to the
13 benefit of the payee and the bank in the check collecting and clearing sequence is
14 achieved.

15 Thus, the system accelerates the payment collection process by eliminating the
16 need for, and the time consumed by, the physical transport of checks to the depository
17 bank and the subsequent physical transport of the checks and submission of checks into
18 the check payment system by the depository or the collecting and clearing bank.
19 Separate sorting of checks and EPIs and capture of information by both the payee and a
20 bank of first deposit is eliminated. The inter-relationship of the depository bank, or the
21 collecting and clearing bank, with the sorter and indorsement applier is effected by
22 electronic communications and a control system of processing computers at one or each
23 of the bank and the payee. The cash letters for the sorted checks on behalf of the

1 collecting and clearing bank are prepared at the remote customer/payee's location.
 2 Physical items that formerly required double handling, first by the customer/depositor
 3 and then by the collecting and clearing bank are now singly handled at the point of
 4 receipt at an item capture facility where the beginning of the payment process also
 5 includes the introduction of the payor and payment identifier information into the
 6 customer/payee's own account records. Not only is the collection of funds expedited, but
 7 because the system is integrated at the payee site with the payee's own internal
 8 accounting system, added efficiencies to the overall process of bill payment and funds
 9 collection are achieved both by the payee and the bank of first deposit.

10 As handling is reduced, redundancy is eliminated, cost is reduced and errors
 11 caused by the transfer and handling of numerous payment records are also reduced.
 12 Payments are forwarded according to predetermined sort pattern categories into the
 13 payment system as established by the collecting and clearing bank. Hence, with
 14 reference to Example 3 and a local utility as an assumed payee, most of the payments
 15 received by the utility would likely be drawn on banks in the utility service area, and the
 16 clearing of the payments would be effected through the local clearing house system or on
 17 a bilateral or multilateral basis. The collecting and clearing bank, if in a location other
 18 than that of the utility, maintains an electronic link for settlement purposes for
 19 participation in that local clearing house payment system.

20 The payees in Example 3 and in Example 4 may also establish and maintain an
 21 archive on behalf of the depository bank for the received checks, as well as for itself,
 22 whereby each check received by the payee is (or could be) microfilmed or imaged and
 23 assigned a unique document identification number for retrieval purposes.

1 Thus, the invention provides a system for effecting the deposit of checks and the
2 collection of funds represented by checks and EPIs that are received by a payee at a
3 location remote from the payee's depository bank and presented for payment to multiple
4 institutions in the payment system.

5 A communication link between the payee and the depository bank enables the
6 payee to report to the bank the information about the payments and cash letters and
7 permits the bank, upon receipt of the information, to anticipate in the bank a deposit in
8 the payee's account. Typically, when the bank receives confirmation that it has received
9 credit for the cash letter through the payment system, it makes the funds available to the
10 payee, although other contractual arrangements between particular payees and its
11 depository bank may be negotiated.

12 The timing of communications and the scheduling and confirmation of payment
13 processing activities are coordinated by a central processing unit and communication
14 link among the parties involved in the check payment process. In this manner the timing
15 of the transmission of payment instrument data for submission into the payment system is
16 controlled by the depository bank and the delivery by the payee of the sorted checks data
17 records and EPIs into the payment system is confirmed and verified to the bank by the
18 payee and through the bank's link into the payment system. The recording of the
19 payment deposit as withdrawable funds in the payee's account with the depository bank is
20 thus coordinated with the timing of the issue of a credit to the bank when the payments
21 are cleared through the payment system and the bank's account in the payment system is
22 credited with funds received. The electronic transmission of bundled (sorted)
23 instruments and the associated cash letters from the payee's item capture facility location

to a payment system receiving point is effected by communication links as shown in the figures.

In certain circumstances, it is desirable to verify the cash letter or bank information at one or more stages. For example, the image of the check produced as 36 in Figure 3 and Figure 4 may be verified, electronically or manually, with the check-by-check bank information extracted electronically 35. In another embodiment, the electronic cash letters generated at 41 or 35 are compared with the electronic bank information at more than one location, by more than one piece of equipment, and/or by more than one human operator. Verification of physical cash letters 52 against electronic bank information and/or the images of the checks themselves is also an adaptation of the present invention. When images are transmitted through the communications links 39 and 42, it becomes easier for multiple verifications to be made comparing the bank information and cash letters with each other and with the check image itself. Although data encryption is employed as a security measure in electronic funds transfer (and presumed herein), additional data checks and verification at several points along the transmission system enhance security. Redundant parallel communications links, with a different encryption procedure for each, allow the comparison and verification of the bank information at both ends of the parallel, encrypted transmissions.

Given the foregoing disclosure, it is evident that the benefits of the system described herein may be extended to numerous types of commercial activities in which a volume of checks is received. The examples described a utility as a payee. The benefits of the present invention will be most apparent to bank customers that receive a large number of periodic check payments from numerous of their own customers. Individual

1 banks themselves may establish a relationship with a bank using the present invention. In
 2 this case, the depository bank 2 in Figure 3 and Figure 4 would be a bank of second (or
 3 later) deposit, receiving electronic information, and/or checks from another bank as its
 4 customer 1. The depository bank 2 would be an outsource processor for the other bank.
 5 There is no essential change in the present invention whether the bank customer 1 is a
 6 commercial entity or itself a depository bank for commercial entities.

7 Having described the invention in detail, those skilled in the art will appreciate
 8 that, given the present disclosure, modifications may be made to the invention without
 9 departing from the spirit of the inventive concept herein described. Therefore, it is not
 10 intended that the scope of the invention be limited to the specific and preferred
 11 embodiments illustrated and described. Rather it is intended that the scope of the
 12 invention be determined by the appended claims.

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